How Much Do You Know About Feeding?

When do most colonies die of STARVATION?
What is the BEST feed?
What makes the BEST feed?
When should you feed?
Why should you feed?
What is the BEST type of feeder?
When do you stop feeding?
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It is quite amazing to find that most beekeepers will testify that they "know ALL things regarding feeding", but observance of their bees and hearing their statements about feeding reveal a VAST LACK OF KNOWLEDGE ABOUT FEEDING. Hence, this paper will attempt to delineate the many "good and bad" points about properly feeding bees.

WHEN DO MOST COLONIES DIE OF STARVATION? - This, of course, will heavily depend on where your bees are located; but more bees in Maryland die of starvation in MARCH than any other month. Generally, there are not too many days in March that are free of wind, rain, clouds, or temperatures higher than 55¡, and hence bees are not able to go outside and forage for food. However, bees have found some early nectar and pollen from perhaps maples and skunk cabbage on one of two days back in February and this has initiated brood rearing because "spring is close by". Bees foraging for water or pollen need food for flying, bees producing bees wax for comb building needs lots of food, and all that new brood larva being so lavishly fed with royal jelly, nectar, and pollen uses up tremendous quantities of stores. We humans, who have minds so we can think and plan, would ration our food supplies and hold back that population increase until weather improved thereby providing nectar; but honey bees do not have the minds of humans and hence cannot think and plan ahead. Hence, if the colony entered the "quiet time" of late fall and winter confinement without adequate stored food honey), the colony is bound to die of starvation in late winter or early spring.

WHAT IS THE BEST FOOD? - For that large segment of readers who answer: honey, you are WRONG! Honey is NOT the best food for a bee, nor is it the most desired food of the bee! Honey for a bee is very much like hardtack for a sailor or a K ration for a soldier. Honey is a stored food for winter use. The choice food of all honey bees is NECTAR! What is the chemical makeup of nectar? Nectar is a watery solution of several different chemical sugars: sucrose (common table sugar) is the predominant sugar followed by small percentages of other sugars, fructose and dextrose; and trace amounts of about 20 other sugars. Depending on the floral source, humidity, time of day, and many other components, nectar may vary from a skimpy 4% sugar solution to a very high 60% sugar solution. Within every nectar, there is some minute quantity of a substance, herb or oil, that gives the nectar an odor or taste that attracts the bees to it. The singular most important thing that a beekeeper should know is that nectar is the most desired food of a honey bee, whereas honey is an emergency winter food.

WHAT MAKES THE BEST FEED? - Just about anything sweet has been tried by beekeepers over many years, and here are the names of some: honey, table sugar (sucrose) syrup, hi-fructose corn syrup, coke syrup, molasses, pancake syrup, candy, and just plain dry sugar. With the exception of table sugar syrup, all of the other items mentioned above, have some problem that may not make them desirable feed for honey bees. Honey may contain bacteria or disease pathogens (and probably does if it came from a commercial packer), hi-fructose corn syrup is made by chemically converting potato starch into glucose followed by converting glucose into fructose, and coke syrup, molasses. pancake syrup, and candy all contain some ingredients that provide the taste characteristic to the product. All of these products except plain sugar syrup contain components such as starches or sugars other than sucrose that may present problems for bees, notably dysentery. Plain table sugar is SUCROSE, just as in nectar, and is totally digestible by the bee which converts the sucrose into the two simple sugars of fructose and glucose, which are the sugars contained in honey. When 1 pound of sugar is dissolved in 1 pound of water (same as 1 pint), that is referred to as 1:1 sugar syrup, and is considered artificial nectar by the bees which stimulates brood rearing. When 2 pounds of sugar is dissolved in 1 pound of water, that is referred to as 2:1 sugar syrup, and is quite similar to honey and is used for winter storage rather than nursery feed. Even though you might save money by purchasing hi-fructose corn syrup, coke syrup, or be given candy refuse or other sweet products, there is little question that table sugar syrup is the safest food you can give to bees and hence table sugar makes the BEST FEED!

WHEN SHOULD YOU FEED? - There is no special time. You feed bees whenever it is beneficial for the bees and helpful for the beekeeper! Obviously, feeding is necessary when the bees are short of winter stores, so you either feed in cold January or February or let the bees starve to death. Bees absolutely will NOT build comb unless there is a nectar flow in progress, so if you are trying to get foundation drawn into comb, you feed 1:1 sugar syrup as an artificial nectar regardless of whether the time is spring, summer, or fall. One of the most important times to feed is when starting new colonies and trying to build up their population strength, their comb, and their winter stores. Many beekeepers don't bother to feed new colonies in June, July, or August figuring that nature will provide nectar. In Central Maryland, there is rarely any nectar for bees available in July and August; and what about those rainy days when bees can't fly? In almost any part of the U. S., there are some warm months that have very little nectar flow, and new colonies will suffer if not fed during this time.

WHY SHOULD YOU FEED? - Feeding is aiding your bees when Mother Nature is not cooperating, e. g., a drought or a long cold winter, so bees can eat and build comb 24 hours/day rather just during flight days, or getting medicine into their stomachs like Fumidil-B. If you want your bees to produce a large honey crop for you to sell, take good care of them, and feed them to make them strong.

WHAT IS THE BEST TYPE OF FEEDER? - Before even mentioning the various types of feeders, ROBBING must be understood. If you are trying to feed a new or weak colony that has other strong colonies nearby, there is a strong chance that your new or weak colony will be KILLED by robber bees, unless the colony being fed has small entrance areas that can be easily defended. Further, if the beekeeper spills feed on the ground or a place that robber bees can easily locate, disaster of a weak hive is being invited! Further, and so many beekeepers just don't understand this, if you are trying to feed bees in cold weather (anything below about 30¡-40¡), the

bees are "huddled" into a cluster to keep warm. In spite of perhaps being hungry, the bees will starve to death rather than leave the cluster warmth and travel 4"-6" away to a source of sugar syrup. Now, with these two problems understood, types of feeders will be presented.

There are basically five different types of feeders: the Baggie feeder, the Hive Top feeder, the Jar or Pail feeder, the Boardman Entrance feeder, and the Division Board feeder. Using the Jar or Pail feeder probably gets the sugar syrup closer to the bees than any other type of feeder. The Jar or Pail can be inverted over the hole in the Inner Cover center, or remove the inner cover and place the several Jars or Pails right on the Frame Tops. Of course, an empty hive body must surround these jars to keep the weather and/or robber bees outside where they belong. This type of feeder is easily replaced with a full feeder without opening the brood area of the colony! The Boardman Entrance feeder has very limited use, because it is an easy target for robber bees, and the bees can NOT get to it in cold weather. It should never be considered for any serious feeding problem. The Division Board Feeder takes the place of one or two frames in a hive and tend to drown a lot of bees, can be too far away from clustered bees for bees to retrieve sugar syrup from it, and the hive has to be totally opened up by the beekeeper for refilling with sugar syrup. Both the Baggie feeder and the Hive Top feeder are boxes with a closed bottom shaped very much like a shallow super which holds either about 2 gallons of sugar syrup or a pair of gallon plastic bags of sugar syrup; and both boxes have an entrance way from the brood area to the top of the feeder for the bees to get sugar syrup. The biggest problem here is leakage of the feeders and "flooding" the bees below with syrup, and in cold weather the bees will not break cluster to climb up to the top of the feeder to get syrup. Some people remove the inner cover, place a plastic bag filled with sugar syrup on the frame tops, carefully cut slits in the top of the plastic, and cover up. This requires very careful placement of the bag without crushing bees, and very careful cutting of the bag to provide bee access without a "flood" of syrup.

In the final analysis, a gallon size GLASS (not plastic) jar with 4-5 one sixteenth inch holes punched in the cap is hard to beat as a feeder, because it can be placed right on the bees, syrup level is visible to the beekeeper, and the hive does not have to be opened to replace the feed. Used gallon GLASS jars are used by delicatessens for hot sausages, pickles, and pig knuckles and are thrown in the trash when empty, unless a beekeeper swaps them for a jar of his honey. Plastic jars (like milk jars) tend to lose the inverted suction from the syrup, collapse, and "flood" the bees with syrup, so use only GLASS jars.

WHEN DO YOU STOP FEEDING? - It is inherently natural for a honey bee to want to get outside and fly to gather odoriferous natural nectar and pollen rather than being cooped up in a hive eating artificial nectar (sugar syrup) and/or old stored honey. Hence, you can stop feeding when the bees won't take feed anymore. However, this is NOT true in the case of new colonies started in April or May with nothing but foundation. Please note that bees WILL NOT BUILD COMB (draw foundation) in the absence of a nectar flow! Quite often, and particularly in Central Maryland with its nectar flow limited to only April, May, and maybe 10 days of June, if this new colony is not continuously fed sugar syrup (artificial nectar) from the day it was started until September, there will be very little foundation drawn, and maybe not enough to hold 50-60 pounds of winter stores needed to get to next spring!

WHAT PROBLEMS CAN FEEDING CAUSE? - A feed made ONLY from SUCROSE (common table sugar) will NOT cause any health problems for a bee; but a feed made from any other type of sweetner like Hi-Fructose corn syrup, coke syrup, molasses, pancake syrup, or candy may disturb the digestive system of the bee and cause diarrhea. (You can't work very well with a case of diarrhea, and neither can a bee!) The other major problem is ROBBING, which can badly weaken or even kill small colonies, cause the stinging of neighbors in their own yards, and spread bee diseases. In other words, you don't want to do anything that will promote ROBBING.

At the risk of being anthropomorphic, let us compare the feeding of humans to the feeding of bees. When humans expend high energy like playing football, they eat large quantities of nutritious bacteria free food, and bees are no different in that they need continuous quantities of good food to have the energy to fly and carry heavy loads of nectar or pollen, and to grow bees wax scales for comb building. A pregnant woman requires large amounts of good food just as required by brood larva being raised in the early spring. It has been estimated that in those areas of only wild (feral) bees, not more than 10% of all swarms make it to the following year, because most of them starve to death. The task of a good beekeeper is aiding or assisting his bees to survive by preventing starvation, not introducing poisons or disease to them, nor being careless about spilled food that might cause death from being ROBBED. Isn't that what our friends, police, doctors, and preachers do for we humans? Let us all help apis mellifera with proper feeding!

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